

ring. The cenchri are white; the fifth abdominal segment is also white; the attachment of the following segment shows through as an indistinct ring; coxæ and femora blue-black, the anterior knees reddish; tibiæ red, those of the posterior legs white at the base; tarsi red, with brown claws. The stigma of the wings is blackish, with a white base; the wings themselves are somewhat smoky.

Besides being smaller the male differs from the female in having the fifth abdominal segment black, and in the absence of the white base to the hinder tarsi.

I have not observed the act of ovipositing, but in the month of August I found some eggs on a rose-leaf stowed away in little bags on the leaf, the skin on both sides of these little bags being brown. From these eggs proceeded little caterpillars of a gray colour, with black heads (see fig. 9 *b*); they ate holes from the under side of the leaves to the upper, and, both in appearance and the manner in which they lay rolled up, entirely agreed with the larvæ just described. I left them in the open air, where they were unfortunately washed off or killed by the rain and wind. I conclude these little larvæ were those of our species, and have therefore given a figure of them on this plate. The claws of this insect are remarkable; one is represented at fig. 10: they consist of three moderate-sized crooked and rather blunt teeth, united together into a sort of comb. Each foot has two such diverging little combs.

Notes on Aphides. By FRANCIS WALKER, Esq., F.L.S.

(Continued from Zool. S. S. 1333).

Myzus Cerasi (S. S. 1121).—The male of this species appears in October. It is black; the antennæ are much longer than the body, and the joints except the seventh are slightly incrassated; the nectaries are nearly one-fourth of the length of the body; the legs are long and slender; the femora and tibiæ dark green, black towards the tips; the wings are twice the length of the body, the stigma black.

M. Persicæ (S. S. 1121).—I wish to call attention to the characters by which Passerini distinguishes *Myzus Persicæ*, *Passerini*, from *Aphis Persicæ*, *Fonscolombe*. The latter abounds on peach trees in England. The antennæ on a frontal tubercle distinguish *Myzus* from *Aphis*.

M. Lychnidis (S. S. 1122).—It is remarkably abundant in the Channel Isles, and I have also found it in the Isle of Man. Passerini mentions two species of *Aphidinae* that infest the *Lychnis*; I have only observed one in England.

M. Oxycanthæ (S. S. 1122).—It appears in July, and the following description refers to the apterous female. Pale green, shining, nearly elliptical, very finely

punctured. Antennæ longer than the body; tips of joints black. Nectaries about one-fifth of the length of the body, converging towards each other. Legs long, slender; tarsi and tips of femora and of tibiæ blackish. Length $\frac{3}{4}$ line.

M. Ribis (S. S. 1122).—This species is more widely different from *M. Cerasi*, the type of *Myzus*, than the latter is from the genus *Aphis* as it is now limited. A new generic name is therefore required for it. It is the common *Aphis* of the red currant, which, like the black currant and the gooseberry, is also infested by the three following species:—

1. *Rhopalosiphum Lactuæ* (S. S. 1118). *Aphis Lactuæ*, *Kaltenbach*; *Rhopalosiphum Ribis*, *Koch*.—Koch refers to this species the *Aphis Ribis* of Linné, of Schrank and of Kaltenbach.
2. *Aphis Ribicola*, *Kaltenbach*. This and the following species have not hitherto been recorded as British. It should be transferred to the genus *Myzus*.
3. *Aphis Grossulariæ*, *Kaltenbach*. In 1869 I found this species in abundance.

Koch correctly mentions his *Siphonophora Ribicola* as the *Aphis Ribis* of Linné, of Frisch and of Fabricius, but it is also the *Aphis Ribis* of Kaltenbach, and not the *A. Ribicola* of that author.

M. Mahaleb (S. S. 1122).—The sloe is certainly the permanent habitation of *Phorodon Humuli*, and I still believe that the latter is *Aphis Mahaleb*, *Fonse.*, though Passerini states that it is not so.

Hyalopterus Pruni (S. S. 1123).—This is one of the species whose history is yet incomplete, notwithstanding the excessive abundance in which it occurs. *H. tetra-rhoda* may be removed from this genus, which is connected by some intermediate forms with *Atheroides*, but has most affinity to *Phorodon*.

Aphis Saliceti (S. S. 1296).—No English description of this species has yet been published. It occurs occasionally in large swarms on the shoots of the willow, and is remarkable on account of the various colours which it assumes. It often has an orange hue.

A. Cardui (S. S. 1297).—It is more allied to the genus *Myzus* than to *Aphis*; and is less abundant than many species, and no English description of it has yet been published. *Apterous female*.—Green, oval, very plump and shining, with slight black bands. Antennæ slender, whitish, blackish towards the tips, much shorter than the body. Abdomen wholly black, except towards the base. Nectaries black, about one-eighth of the length of the body. Legs whitish; femora, tarsi and tips of tibiæ black. *Var.*—Body wholly black. *Winged female*.—Black. Antennæ very much shorter than the body. Abdomen green, with black bands. Nectaries black, about one-fifth of the length of the body. Tail rather long. Legs green; femora towards the tips and tarsi black. *Var.?*—On *Senecio Jacobææ*. Pale red, or with the disk of the body shining black. Nectaries not more than one-tenth of the length of the body.

A. Sedi (S. S. 1297).—This is a very small species and not of frequent occurrence. I have considered it and many others that have been described by different names as variations of *A. Rumicis*. Nearly all the migratory species of *Aphidina* are definite in their selection of plants for their new habitation, but *A. Rumicis* in the winged form is extremely indiscriminate as to where it alights and multiplies. Sometimes the offspring perish quickly, sometimes they linger for awhile; in other instances they thrive more or less and are altered by their food, but their existence does not pass into

the male nor into the oviparous female, and therefore they cannot be considered as true species. Many volumes might be written on the migrations and settlements and consequent variations that occur.

A. Hederæ (S. S. 1298).—Kaltenbach, who first characterized *A. Hederæ* and *A. Ilicis*, suggests that they may be varieties of one species, and I have been unable to detect any permanent difference between them, and accordingly consider them as one species. I have tied a twig of ivy covered with Aphides to a shoot of holly: the Aphides crawled from the ivy to the holly; they did not feed there, and soon passed away. This might be expected, for the apterous form of *Aphis*, as the genus is now restricted, never moves from the spot where it feeds until its food withers, and then it perishes. The winged form hardly feeds after it migrates.

A. Sambuci (S. S. 1298).—Passerini cites this species as the type of the genus *Aphis* as it is restricted by him. Some of the species which he enumerates should be excluded from it, and it comprises very numerous closely-allied species, or, it may be, forms whose respective differences are occasioned by their food. The oviposition of *A. Sambuci* has not yet been observed. It is especially remarkable on account of the suddenness of its appearance on the elder, and on account of its rapid increase. Its profusion in 1869 exceeded that of every preceding year in which I have observed it. It sometimes occurs with a pale green hue, very convex, and with nectaries not more than half the usual length. Two variations of its structure are here briefly mentioned. *First*.—Oval, bluish green. Antennæ less than half the length of the body. Nectaries comparatively short. Legs rather short. *Second*.—Triangular, widening from the head to the tip of the abdomen, which is almost truncated. The larva of an *Agromyza* sometimes devours *A. Sambuci*, and may be the same species that is much more destructive to *A. Symphiti*.

A. Laburni (S. S. 1298).—It generally looks very different from *A. Rumicis*, but the gradations of size and colour in the dark-coloured individuals of this genus are very numerous. In 1869 it appeared in excessive numbers. *Apterous female*.—Black, uniformly covered with white tomentum. Antennæ white, black at the base and towards the tips. Nectaries about twice the length of the tail. Legs white; femora black, white at the base; tarsi and tips of tibiæ black.

A. Papaveris (S. S. 1298).—A distinct difference should have a definite name, whether it be termed a species or a variety, but there is no determinate difference between *A. Papaveris* and *A. Rumicis*, and I believe that many so-called species and *A. Rumicis* will be found to have a common annual origin.

A. Rumicis (S. S. 1298).—An *Aphis* that occurs on the Guelder rose (*Viburnum Opulus*), in July, is quite distinct from *A. Viburni* and may be referred to this species, and the following description refers to the apterous female:—Dark green; disk rather paler. Antennæ white, more than half the length of the body, black at the base and for half the length from the tips. Nectaries a little longer than the tail, about one-tenth of the length of the body. Legs white; femora except the base, tarsi and tips of tibiæ black. Length $\frac{1}{2}$ line.

The following description refers to an *Aphis* that feeds on the leaves of the vegetable marrow, and is probably a variety of *A. Rumicis*:—July. *Apterous oviparous female*.—Oval, dull, rather dark green, mottled with paler green, one-third of a line in length. Antennæ pale green, a little more than half the length of the body. Nectaries black, about one-sixth of the body. Tail short. Legs pale green, rather

short; tips of the tibiæ and of the tarsi black. September.—Most of the Aphides black; some green, mottled with darker hue; some pale green or pale yellow, with black nectaries, which are shorter than those of the normal form; their bodies also are more globose. The offspring of the last-mentioned variety are generally but not always dingy, and unlike it in colour. In October it is much more numerous, and of all colours from pale green or yellow; the young are often reddish green. The winged females have a black offspring. Towards the end of October nearly all the Aphides were dark green; a few were pale green, and the winged male paired with the latter. In November all were dark green. In August some occurred of a dark green colour, with transverse white streaks on each side of the body, and with black nectaries.

A. Genistæ (S. S. 1298).—I believe that this and *A. Laburni* are identical, though the latter is more shining, especially in the disk of the body. A much smaller Aphid that dwells on the furze may be termed *A. Ulicis*. It is sometimes like *A. Laburni* in colour, sometimes like *A. Runicis*.

A. Euphorbiæ (S. S. 1298).—The Aphid that occurs on the Spurge in England seems to be a variety of *A. Runicis*. The apterous female is black and dull. Antennæ white, black towards the tips. Legs white; tarsi black. The nectaries are shorter than those of *A. Laburni* and of *A. Genistæ*, and it does not equal the former in size.

A. terricola (S. S. 1299).—This species and *A. terricola* described by me live under ground in the apterous state. The latter species feeds on the root of the parsnip, and it occurs at the depth of one foot beneath the surface of the ground, to which it crawls when it is about to assume the winged state.

Siphocoryne Fœniculi (S. S. 1300).—It abounds on fennel in gardens, and is smaller than *S. Caprææ*, which it much resembles, and these two species may constitute a new genus, being very different in structure from *S. Xylostei*, the type of *Siphocoryne*.

Myzocallis Quercus (S. S. 1300).—This species appeared in unusual abundance during the summer of 1869. It is one of the few species of Aphididæ that I observed in the Channel Isles and in the Isle of Man. The genus *Myzocallis* should be restricted to *M. Quercus*, *M. Quercea* and *M. Coryli*. *M. Ononidis* is the type of a new genus, which I have named *Therioaphis*.

Chaitophorus salicivora (S. S. 1300).—The winged form of this species occurs in Italy, but I have never found it in this country. It chiefly abounds in the autumn, and varies in colour, being pale yellow or pale green, with brighter marks. The male and the oviparous female appear in October; the former is hardly more than one-fourth of the size of the latter, and is distinguished by a stripe of brown and black streaks. It is very different in structure from *C. Aceris*, which is the type of *Chaitophorus*, and will form a new genus, which I have named *Tranaphis*.

Chaitophorus Aceris (S. S. 1300).—*C. Acericola* is probably an especially southern form of *C. Aceris*. Some examples of it occurred in a year that was very favourable to the development of Aphididæ. At Interlaken, in Switzerland, it was generally prevalent to the exclusion of *C. Aceris*. The latter is remarkable on account of the widely different forms which it assumes, and also on account of the suspension of growth in the young of the third generation. The normal form appears in the early part of the year and also in July, and with it in the latter month I have observed on the same leaf the little flat form with laminæ round the abdomen. The variations

of this species are noticed in the 'Zoological Record' for 1867, page 482, and I believe that *Aphis perforatus*, *Signoret*, referred to in the same work (p. 483) is one of the modifications of *C. Aceris*.

Chaitophorus Populi (S. S. 1301).—I have proposed the generic name *Arctaphis* for this species, which differs much from *C. Aceris* in structure.

Pterocallis Abni (S. S. 1301).—It is of frequent occurrence in the Isle of Man. *P. Tiliæ* is the type of Koch's genus *Callipterus*, which, with *Myzocallis*, *Pterocallis*, *Therioaphis* and *Agrioaphis*, forms a group in the Aphidina. *Aphis Myricæ*, *Kaltenbach*, is the type of my genus *Agrioaphis*. In addition to *C. Tiliæ* the lime is infested by the following insects. The galls on the twigs of the lime (formed by *Cecidomyia Tiliæ*) and the mites that infest the leaves are very variable in their appearance. The mites are *Tetranychus socius* (*Koch, Acariden, &c.*, 17, 16; *Trombidium socium*, *Hermann, Mém. Apt.* 43, 26, pl. 2, f. 13), and *T. tiliarum* (*Koch, Acariden*, 17, 13; *Trombidium tiliarum*, *Hermann, Mém. Apt.* 42, 25, pl. 2, f. 12). The former is wholly yellow; the latter is very pale yellow, pale green along each side and with some black marks. They are nearly allied to the mite that infests the leaves of the currant.*

Trama and *Paracletus* (S. S. 1301).—These two genera are composed of subterranean species, and may be placed more naturally with the *Rhizobinæ*.

Sipha Glyceria (S. S. 1328).—This is the type of the genus *Sipha* and has been hitherto included in *Atheroides*, *Haliday*. *A. serrulatus* is the type of the latter, and both genera should be transferred from the *Lachninæ* to the *Aphidinæ*.

Lachnus Quercus (S. S. 1329).—This is the type of my genus *Stomaphis*. Unlike most species of *Aphididæ* it is very limited in numbers and in the spots where it occurs. It has been observed, though rarely, in Surrey, Kent, Essex and Middlesex, and I have found it on "Turpin's Oak," near Finchley. It does not seem to be attacked by parasites, and it lives securely in the deep recesses of the oak bark, where its long rostrum, which it can extend or retract, enables it to feed on the sap. It is thus always provided with food except in the winter, and, unlike the migratory *Aphididæ*, does not need a new abode, and accordingly very seldom assumes the winged state. The latter form appears in spring, and, like the male, has no long rostrum, and the migration at this early period allows time for the settlement in a new habitation before the development of the oviparous generation when the wingless male also appears.

Lachnus Piceæ, *Panz.*—It is less regular in its appearance than the other English *Lachni* that feed on the fir tribe, and occurs only now and then near London. It is especially an arctic species and has been taken very far north in the polar regions. I have found it on the Grimsel, and I observed many specimens of it on the Mer de Glace. It is the *Dryobius riparius* of *Snelleu van Vollenhoven*.

Callipterus Juglandis (S. S. 1329).—The genus *Callipterus* may be restricted to *C. Tiliæ* before mentioned, and the two species included in it by *Passerini* belong to two widely different genera; the first is one of the *Lachninæ*, the second one of the *Aphidinæ*. *C. Juglandis*, for which I propose the generic name *Callaphis*, lives on the upper surface of the leaf in masses along the midrib. Like the genus *Cladobius* it seems to connect the *Lachninæ* with the *Aphidinæ*. *C. Juglandicola*, which I have

* *Trombidium telarium*, *Hermann, M. A.* 40, 24, pl. 2, f. 15. *Tetranychus telarius*, *Koch, Acariden*, 17, 12.

named *Chromaphis peglandicola* live scattered on the under surface of the leaf like the species of *Myzocallis*.

Pterochlorus (S. S. 1329).—This genus follows *Stomaphis* and is Koch's *Dryobius*, and the latter name has the precedence. There are only two species known, *D. roboris* and *D. longipes*, the former a native of North Europe and the latter of South Europe. The slight difference between them may have been the effect of climate.

Phyllaphis Fagi (S. S. 1329).—The genus of which it is the only representative should be removed from the *Lachuinae*. The latter may be generally separated from the *Aphidinae* by the greater length of the rostrum in proportion to the body, a character which also distinguishes the early age of the *Aphidina* from their final state. *Phyllaphis* may perhaps be associated with *Drepanosiphum*, *Euceraphis* and *Monaphis* as a group of *Aphidinae*.

Euceraphis, Walk. Type *A. Betulæ*, Linn.—*Aphis punctipennis* (*Zetterstedt*, *Ins. Lapp.* i. 2, 311) belongs to this genus. It feeds on the birch and on the alder, and inhabits Lapland and Greenland. I have found it on the alder at Chamouni.

Monaphis, Walk. Type *A. antennata*, *Kaltenbach*. This genus is most allied to *Euceraphis*, but its peculiar structure sufficiently distinguishes it. The scarcity of its occurrence and its solitary habits are in remarkable contrast to the generality of the *Aphididae*.

Schizoneura lanigera (S. S. 1330).—It is generally limited to the trunk and branches of apple-trees, but it sometimes occurs in abundance on the young shoots. It is the American blight about which much has been written and for which many remedies have been proposed.

Pemphigus (S. S. 1330).—*Passerini* describes many new species of this genus and distinguishes them by the difference in the length of the joints of the antennæ. In the *Aphidinae* this character is occasionally variable in individuals of one species.

Vacuna dryophila (S. S. 1332).—*Thelaxes* has the right of priority as a generic name for this species, and the genus *Vacuna* may be restricted to *V. Alni*. *V. dryophila* appeared more abundantly than usual in 1869 near London, and I also observed it in the Isle of Man.

Vacuna Alni (S. S. 1332).—Until I saw *Passerini*'s work I was not aware that this species fed on the alder as well as on the birch. I have since found it in abundance on the alder at Chamouni, but in England I have only observed it on the birch. It is the *Aphis Alni* of *Schrank*, the *Vacuna Betulæ* of *Kaltenbach*, and the *Glyphina Betulæ* of *Koch*.

Chermes Abietis (S. S. 1333).—The winged form is developed in the middle of August, and is then abundant on the spruce fir. The natural history of the species of this genus is very interesting and has been only slightly noticed in English publications.

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